

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1737	conductive adj2 (adhesive paste paint ink) and epoxy and (copper Cu silver Ag metal alloy ) near5 (powder particle) and (particle grain) near2 (size diameter micron) and (wt weight vol volume) near2 ('%' \$2% percent ratio part)	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/14 10:15
S2	516	S1 and (bisphenol alicyclic adj epoxy glycidyl adj amine glycidyl adj ester glycsile adj amine glycsile adj ester epi\$2ote)	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/14 10:16
S3	42	S1 and (copper Cu silver Ag metal alloy ) same (wet adj2 reduction reduction near5 solution)	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/14 10:17
S4	49	S2 and (particle powder) near5 (agglomerat\$7)	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/14 10:17
S5	162	S2 and viscosity with (\$7poise \$7pascal pa\$2 mpa\$2 cps)	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/14 10:18
S6	25	S4 and S5	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/14 10:18
S7	18	S2 and dimer\$3 with (ether ester\$7) with (\$3glycidyl epoxy) and amine same (adduct curing harden\$4)	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/14 10:19
S8	64	S2 and (particle powder) near5 (surface coat\$4 plat\$4) with alloy	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/14 10:19
S9	67	conductive adj2 (adhesive paste paint ink) and (copper Cu silver Ag metal alloy ) near5 (powder particle) and (particle grain) near2 (size diameter micron) and (dimeric \$3glycidyl epoxy) and (surface area viscosity hole)	EPO; JPO; DERWENT	OR	ON	2006/02/14 10:20
S10	30	conductive adj2 (adhesive paste).clm. and (copper Cu silver Ag metal alloy ) near5 (powder particle agglomerate).clm. and (particle grain) near2 (size diameter micron).clm. and (dimeric \$3glycidyl epoxy).clm. and (surface area).clm.	US-PGPUB; USPAT; USOCR	OR	ON	2006/02/14 10:20
S11	37	("06262375" "07176846" "08279665" "2000297303" "2002332501" "2002343135" "2003092024" "2003141929" "2003268402" "2004047856" "6479763" "6494931" "20030122257" "20010005545" "5551626").did.	US-PGPUB; USPAT; USOCR; EPO; JPO; DERWENT	OR	ON	2006/02/14 10:20

# FINE COPPER POWDERS

Fine copper powders are manufactured by Umicore Canada Inc. in Alberta. Umicore Canada is part of the Advanced Materials Division of Umicore S.A., a world leader in the non-ferrous metals and advanced materials sectors.

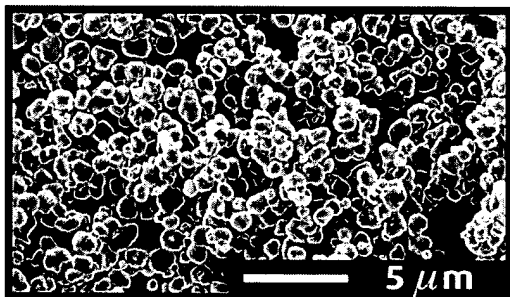
These copper powders are high purity, non-agglomerated, spheroidal products ideally suited to electronic applications, including inner electrode inks, termination pastes and conductive traces. The powders have a protective organic coating. Typical physical and chemical properties are shown below.

## features

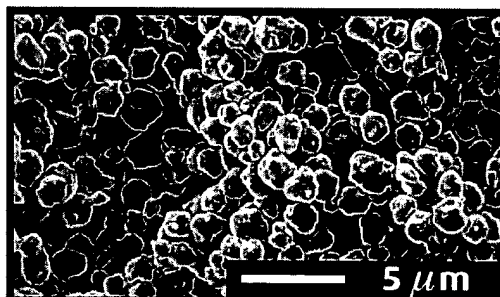
- Spherical Shaped Particles
- High Purity
- Narrow Particle Size Range

## typical powder properties

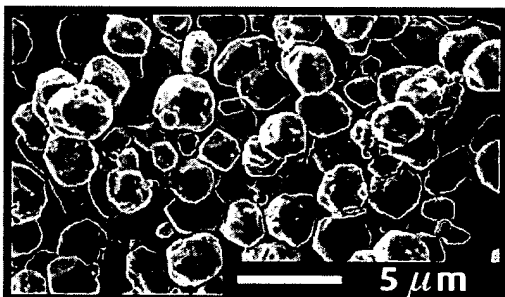
Product Name	UCP 500	UCP 1000	UCP 2000	UCP 4000
D50 ( $\mu\text{m}$ )	1.0	1.3	2.0	4.0
D90 ( $\mu\text{m}$ )	2.0	2.5	3.0	7.0
Surface Area ( $\text{m}^2/\text{g}$ )	1.1	0.8	0.5	0.35
Tap Density ( $\text{g}/\text{cm}^3$ )	3.8	4.2	4.6	5.0
Carbon (wt%)	0.2	0.2	0.2	0.2
Oxygen (wt%)	0.5	0.45	0.4	0.3
Lead, Mercury, Cadmium, Chromium free				



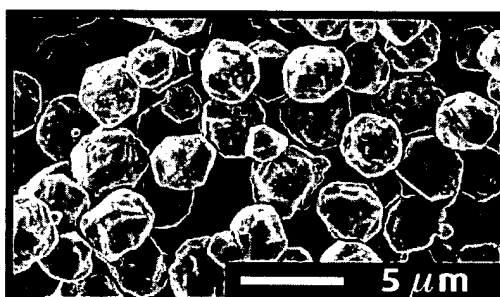
UCP 500



UCP 1000



UCP 2000



UCP 4000

## material safety data sheet (MSDS)

Available on request.

Umicore Canada Inc.

### Commercial Office & Technical Support

PO Box 3538, Fort Saskatchewan AB T8L 2T4 (mailing)  
10110 114 Street, Fort Saskatchewan AB T8L 4K2 (delivery)  
Tel: (780) 992-5700 - Fax: (780) 992-5701

Email: [elpo@umicore.com](mailto:elpo@umicore.com)

Home page: [www.umicore.com](http://www.umicore.com)

01 2006



# FINE COPPER FLAKES

Fine copper flakes are manufactured by Umicore Canada Inc. Alberta, Canada. Umicore Canada is part of the Advanced Materials Division of Umicore S.A., a world leader in the non-ferrous metals

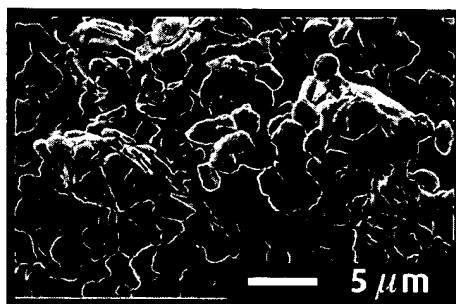
These copper flakes are high purity, non-agglomerated products ideally suited to electronic applications, including termination pastes and conductive adhesives. Typical physical and chemical properties are shown below.

## features

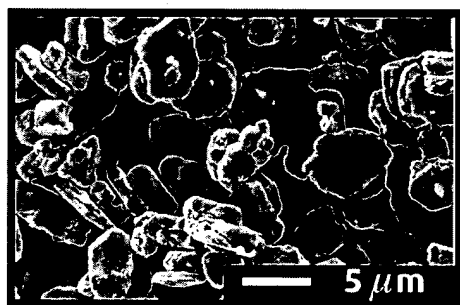
- Coin Shaped Particles
- Stable Oxygen Content
- Narrow Particle Size Range
- High Density

## typical powder properties

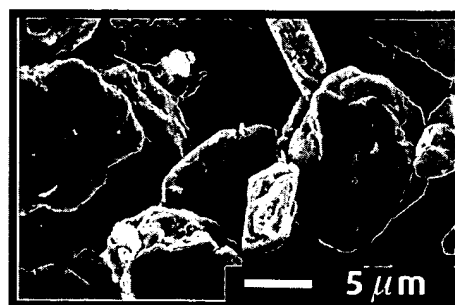
	UCF 3	UCF 5	UCF 8
D90 ( $\mu\text{m}$ )	7	10	14
D50 ( $\mu\text{m}$ )	3	5	8
D10 ( $\mu\text{m}$ )	1	2	5
Surface Area ( $\text{m}^2/\text{g}$ )	1.3	0.5	0.3
Tap Density ( $\text{g}/\text{cm}^3$ )	3.5	3.9	4.4
Carbon (wt%)	0.3	0.3	0.1
Oxygen (wt%)	0.4	0.3	0.2
Lead, Mercury, Cadmium free			



UCF 3



UCF 5



UCF 8

## material safety data sheet (MSDS)

Available on request.

Umicore Canada Inc.

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P.O. Box 3538, Fort Saskatchewan AB T8L 2T4 (mailing)  
10110 - 114 Street, Fort Saskatchewan AB T8L 4K2 (delivery)  
Tel: (780) 992-5700 - Fax: (780) 992-5701

Email: [elpo@umicore.com](mailto:elpo@umicore.com)  
Home page: [www.umicore.com](http://www.umicore.com)

02 2005

# FINE COPPER POWDERS

Fine copper powders are manufactured by Umicore Canada Inc. in Alberta. Umicore Canada is part of the Advanced Materials Division of Umicore S.A., a world leader in the non-ferrous metals and advanced materials sectors.

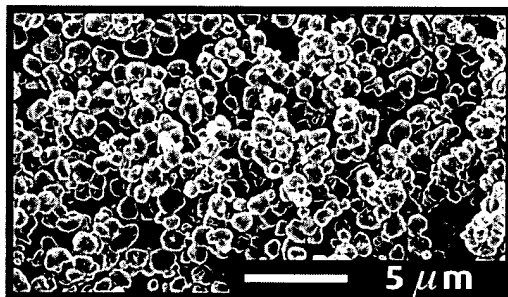
These copper powders are high purity, non-agglomerated, spheroidal products ideally suited to electronic applications, including inner electrode inks, termination pastes and conductive traces. The powders have a protective organic coating. Typical physical and chemical properties are shown below.

## features

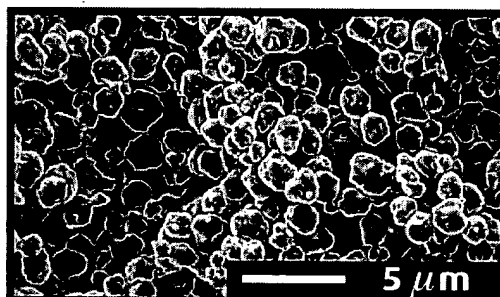
- Spherical Shaped Particles
- High Purity
- Narrow Particle Size Range

## typical powder properties

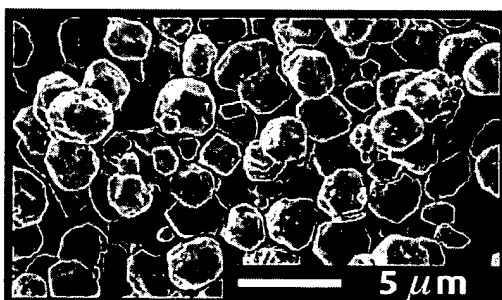
Product Name	UCP 500	UCP 1000	UCP 2000	UCP 4000
D50 ( $\mu\text{m}$ )	1.0	1.3	2.0	4.0
D90 ( $\mu\text{m}$ )	2.0	2.5	3.0	7.0
Surface Area ( $\text{m}^2/\text{g}$ )	1.1	0.8	0.5	0.35
Tap Density ( $\text{g}/\text{cm}^3$ )	3.8	4.2	4.6	5.0
Carbon (wt%)	0.2	0.2	0.2	0.2
Oxygen (wt%)	0.5	0.45	0.4	0.3
Lead, Mercury, Cadmium, Chromium free				



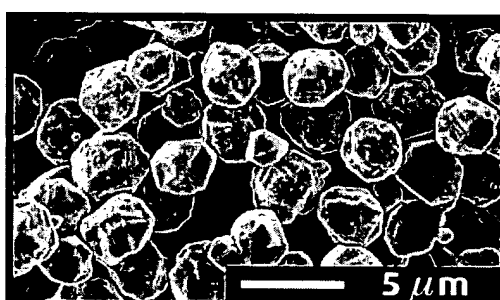
UCP 500



UCP 1000



UCP 2000



UCP 4000

## material safety data sheet (MSDS)

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Home page: [www.umicore.com](http://www.umicore.com)

01 2006



# D.E.R. 330

## Liquid Epoxy Resin

### Description

D.E.R.\* 330 liquid epoxy resin is a reaction product of epichlorohydrin and bisphenol-A.

### Introduction

D.E.R. 330 epoxy resin is a liquid epoxy resin processed to provide low viscosity without the use of diluents. The physical strength, toughness, excellent adhesion, chemical resistance and low shrinkage properties have established liquid epoxy resins as major raw materials for high quality solvent-free coatings, linings, industrial flooring, groutings and concrete reinforcements. They have also found application in the fields of tooling, encapsulation, adhesives, filament winding and laminates. D.E.R. 330 can also serve as a basis for advanced polymers for a variety of solvent-borne, water-borne and UV-curable resins. A wide variety of curing agents is available to cure this liquid epoxy resin at ambient conditions. The most frequently used are aliphatic polyamines, polyamides, and modified versions of these. Elevated temperatures are necessary and long post-cures are required to develop full end properties if anhydride or catalytic curing agents are employed.

### Typical Applications

This product is suitable for use in applications such as:

- Adhesives
- Casting and Tooling
- Civil Engineering
- Composites
- Automotive Coatings
- Can Coatings
- Coil Coatings
- Marine & Protective Coatings
- Photocure Coatings
- Potting and Encapsulation

### Safety and Handling

The Dow Chemical Company provides its customers with a product specific

### Typical Properties<sup>1</sup>

Epoxide Equivalent Weight, (g/eq)	176 - 185	ASTM D-1652
Viscosity @ 25°C (77°F), (mPa.s)	7000 - 10000	ASTM D-445
Density @ 25°C (77°F), (g/ml)	1.16	ASTM D-4052
Color, Platinum Cobalt	125 Max.	ASTM D-1209
Hydrolyzable Chloride Content, (ppm)	500 Max.	RPM 105-D
Flash Point, (°C) (°F)	252 (486)	ASTM D-93
Water Content, (ppm)	700 Max.	ASTM E-203
Epichlorohydrin Content, (ppm)	5 Max.	RPM-900A
Shelf Life, (Months)	24	

<sup>1</sup> Typical properties; not to be construed as specifications

Material Safety Data Sheet (MSDS) to cover potential health effects, safe handling, storage, use and disposal information. Dow strongly encourages its customers to review the MSDS on its products and other materials prior to their use. For further handling information, consult the Dow brochure entitled, *DOW Epoxy Resins Product Stewardship Manual, Safe Handling and Storage*, Form No. 296-00312-898.

### Product Stewardship

The Dow Chemical Company has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis of our Product Stewardship philosophy by which we assess the health and environmental information on our products and then take the appropriate steps to protect employee and public health and the environment. The Dow Chemical Company has enduring commitments to Responsible Care® in the management of chemicals worldwide. Our Product Stewardship program rests with every individual involved with Dow products from the initial concept and research to the manufacture, sale, distribution, and disposal of each product.

### Customer Notice

Dow encourages its customers and potential users of Dow products to review their applications for such products from the standpoint of human health and environmental quality. To help ensure that Dow products are not used in ways for which they were not intended or tested, Dow personnel are available to assist customers in dealing with ecological and product safety considerations.

Your Dow sales representative can arrange for the proper contacts. Dow literature, including Material Safety Data Sheets should be consulted prior to the use of Dow products.

### Food Contact Statement

When properly formulated and cured for food contact applications, this resin will comply with the U.S. Food, Drugs and Cosmetics Act as amended under Food Additive Regulation 21 CFR 175.300. This use is subject to good manufacturing practices and limitations specified in each regulation, which should be consulted for complete details.

If your applications include food contact requirements, please contact your Dow representative for further information and forthcoming EC regulations. Also consult the Dow brochure

entitled, *Food Additive Status for Epoxy Resins, Curing Agents and Epoxy Novolac Resins*, Form No. 296-01425.

### Regulatory Status

This Epoxy Resin is regarded as a polymer according to the 6th Amendment of Council Directive 67/548/EEC and as substances according to Council Directive 92/32/EEC of 30 April 1992; the 7th Amendment of that same directive. The substance has been reported to the European Commission as No-Longer-Polymer (NLP), is registered under NLP number 500-033-5, and is, therefore, exempt from the European Inventory of Existing Chemical Substances (EINECS). In addition Dow confirms that the chemicals and intentional additives which form the basis of this product are listed on EINECS. Please be aware that Dow utilizes CAS Reg. Nr. 25085-99-8 (bisphenol-A diglycidyl ether homopolymer) for bisphenol-A based liquid epoxy resins instead of CAS

### Chemical Inventory List

CAS Number*		25085-99-8 (25068-38-6)
Europe	EINECS	NLP # 500-033-5
United States	TSCA	25085-99-8
Canada	DSL	25085-99-8
Australia	AICS	25085-99-8
Japan	MITI	7-1279
Korea	KECL	KE-24083
Philippines	PICCS	25085-99-8
China	Informal 1997 PRC Inventory	25085-99-8

\* Please refer to the Material Safety Data Sheet (MSDS) or SDS for this product to ensure this CAS number is consistent with the product(s) you use.

Reg. Nr. 25068-38-6 (bisphenol-A polymer with epichlorohydrin) which is utilized for similar resins in the market place. Both CAS numbers describe epoxy resins produced by the condensation of epichlorohydrin with bisphenol-A. With respect to China, please note that there is currently no formal Chinese Chemical Inventory legislation in place. The

Chinese Authorities are in the process of drafting such legislation. There is in place an "Informal 1997 PRC Chemical Inventory List" and the above mentioned CAS Reg. Nr. is listed on it.

For more information on the regulatory status of this product, please refer to the Material Safety Data Sheet (MSDS) or SDS for this product.

### For additional information:

In the U.S. and Canada,  
contact The Dow Customer Information Group at:  
1-800-441-4369 or 989-832-1426  
Fax: 989-832-1465

In Mexico,  
Call 95-800-441-4369 (Toll Free) or  
52-5-2014718 (Outside Mexico)

In Latin America,  
contact The Dow Chemical Service Center at:  
In Argentina, call 54 11 4390329  
In Brazil, call 55 11 51889367

In the Pacific,  
contact The Dow Customer Information Group at:  
+800-7776-7776 (Toll Free) or +60-3-7958-3392  
Fax: +800-7779-7779 (Toll Free) or +60-3-7958-5598

In Europe, Middle East and Africa,  
contact The Dow Customer Information Group at:  
+800 3 694 6367 (Toll Free\*) or  
+32 3 450 2240  
Fax: +32 3 450 2815

\*Toll Free from Austria, Belgium, Denmark, Finland, France, Germany, Hungary, Ireland, Italy, The Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and The United Kingdom.

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Email address: <http://www.dow.com/assistance/thoughts.htm>

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Published October, 2001

